Complete Summary

GUIDELINE TITLE

Blunt chest trauma/chest wall contusions.

BIBLIOGRAPHIC SOURCE(S)

Blunt chest trauma/chest wall contusions. Philadelphia (PA): Intracorp; 2005. Various p. [20 references]

GUIDELINE STATUS

This is the current release of the guideline.

All Intracorp guidelines are reviewed annually and updated as necessary, but no less frequently than every 2 years. This guideline is effective from April 1, 2005 to April 1, 2007.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Blunt chest trauma/chest wall contusions:

- Pulmonary contusion
- Cardiac tamponade
- Pericardial rupture

GUIDELINE CATEGORY

Diagnosis
Evaluation

Management
Treatment

CLINICAL SPECIALTY

Cardiology
Emergency Medicine
Family Practice
Internal Medicine
Pulmonary Medicine
Thoracic Surgery

INTENDED USERS

Allied Health Personnel
Health Care Providers
Health Plans
Hospitals
Managed Care Organizations
Utilization Management

GUIDELINE OBJECTIVE(S)

To present recommendations for the diagnosis, treatment, and management of blunt chest trauma/chest wall contusions that will assist medical management leaders to make appropriate benefit coverage determinations

TARGET POPULATION

Individual with blunt chest trauma/chest wall contusions

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Evaluation

1. Physical examination and assessment of signs and symptoms
2. Diagnostic tests:
    - Chest x-ray (CXR)
    - Arterial blood gases (ABGs)
    - Pulse oximetry
    - Electrocardiogram (ECG)
    - Echocardiography
    - Ultrasound

Management/Treatment

Pulmonary Contusion

1. Oxygen therapy
2. Fluid restriction

3. Chest toilet (ultrasonic mist nebulization, chest physiotherapy, postural drainage, sterile endotracheal suctioning)
4. Antibacterial therapy
5. Pain control (intercostal nerve block or opioids)
6. Intubation, mechanical ventilation
7. Diuretics
8. Nasogastric tube
9. Culture of secretions
10. Colloid versus crystalloid intravenous solutions
11. Referral to specialists

Cardiac Tamponade

1. Decompression of pericardial sac
    - Pericardiocentesis
    - Pericardiectomy
    - Thoracotomy for pericardial rupture
2. Referral to specialists

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Searches were performed of the following resources: reviews by independent medical technology assessment vendors (such as the Cochrane Library, HAYES); PubMed; MD Consult; the Centers for Disease Control and Prevention (CDC); the U.S. Food and Drug Administration (FDA); professional society position statements and recommended guidelines; peer reviewed medical and technology publications and journals; medical journals by specialty; National Library of Medicine; Agency for Healthcare Research and Quality; Centers for Medicare and Medicaid Services; and Federal and State Jurisdictional mandates.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

A draft Clinical Resource Tool (CRT or guideline) is prepared by a primary researcher and presented to the Medical Technology Assessment Committee or the Intracorp Guideline Quality Committee, dependent upon guideline product type.

The Medical Technology Assessment Committee is the governing body for the assessment of emerging and evolving technology. This Committee is comprised of a Medical Technology Assessment Medical Director, the Benefit and Coverage Medical Director, CIGNA Pharmacy, physicians from across the enterprise, the Clinical Resource Unit staff, Legal Department, Operations, and Quality. The Intracorp Guideline Quality Committee is similarly staffed by Senior and Associate Disability Medical Directors.

Revisions are suggested and considered. A vote is taken for acceptance or denial of the CRT.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Diagnostic Confirmation

Subjective Findings

- Pulmonary Contusion
  - History of blunt trauma to the chest
  - History of motor vehicle accident (MVA)
  - Pleuritic chest pain (lung pain)
- Cardiac Tamponade
  - History of blunt trauma to the chest
  - History of motor vehicle accident
  - Precordial pain (heart pain)

Objective Findings

- Pulmonary Contusion
  - Cough, with or without hemoptysis
  - Uni-or bilateral infiltrates on chest x-ray
  - Dyspnea
  - Tachypnea
  - Cyanosis
  - Tachycardia
  - Chest wall bruising
  - Rales or diminished breath sounds to auscultation
  - Rib fracture(s), possible flail chest
- Cardiac Tamponade
  - Hypotension
  - Tachycardia
  - In normotensive patient, rising central venous pressure (CVP) is usually first sign
  - Dyspnea
  - Patients with slow-developing tamponade may appear deceptively stable as compensatory mechanisms go to work.
  - Precipitous fall in CVP and blood pressure indicates decompensation and imminent cardiac arrest
  - Sudden bradycardia and electromechanical dissociation may accompany this terminal event
- Pericardial Rupture
  - Hypotension disproportionate to the suspected injury
  - Hypotension unresponsive to rapid fluid resuscitation
  - Massive hemothorax unresponsive to thoracostomy and fluid resuscitation
  - Persistent metabolic acidosis
  - Elevated CVP with continuing hypotension despite fluid resuscitation

Diagnostic Tests

- Chest x-ray (CXR) to rule out fractures, hemo/pneumothorax, pulmonary infiltrates
    - Pulmonary infiltrates may not show on x-ray until hours after injury.
    - Radiographic evaluation of the cardiac silhouette on CXR is rarely helpful to identify tamponade.
- Arterial blood gases (ABGs)
- Pulse oximetry
- Electrocardiogram (EKG/ECG)
- Echocardiography
- Ultrasound

Differential Diagnosis

- Pneumonia or other infections of the lung (see the Intracorp guideline Pneumonia)
- Asthma (see the Intracorp guideline Asthma)
- Pleurisy
- Myocardial infarction (see the Intracorp guideline Myocardial Infarction)
- Cardiac arrhythmia (see the Intracorp guideline Arrhythmia)
- Rib fracture (see the Intracorp guideline Rib Fracture)
- Pneumothorax/hemothorax/hemopneumothorax (see the Intracorp guideline Pneumothorax)

Treatment

Treatment Options

Pulmonary Contusion

- Mild
    - Oxygen therapy
    - Fluid restriction
    - Conscientious pulmonary toilet:
        - Ultrasonic mist nebulization
        - Chest physiotherapy
        - Postural drainage
        - Sterile endotracheal suctioning
    - Antibacterial therapy (damaged lung is susceptible to infection)
    - Pain control by intercostal nerve blocks or opioids
- Moderate
    - As above, with
        - Possible intubation, mechanical ventilation with low O_2 concentration and positive end-expiratory pressure (PEEP)
        - Diuretics
        - Nasogastric (NG) tube
        - Culture of secretions while on ventilator to monitor for infection
- Severe
    - As above; with higher concentrations of oxygen to correct hypoxemia
    - Prophylactic antimicrobials
    - Cultures of secretions while on ventilator to monitor for infection

- Colloid versus crystalloid intravenous (IV) solutions to manage membrane permeability

Cardiac Tamponade

- Decompression of pericardial sac
  - Via pericardiocentesis - needle aspiration of the fluid surrounding the heart (least invasive) or
  - Via pericardiectomy - surgical removal of a portion or all of the pericardial sac
  - In cases where the pericardium has ruptured a thoracotomy is usually required to repair the rupture.

Additional information regarding primary care visit schedules, referral options, and specialty care is provided in the original guideline document.

The original guideline document also provides a list of red flags that may affect disability duration, and return to work goals, including

- Pulmonary contusion
- Cardiac tamponade

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate diagnosis, treatment, and management of blunt chest trauma/chest wall contusions to assist medical management leaders to make appropriate benefit coverage determinations

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Blunt chest trauma/chest wall contusions. Philadelphia (PA): Intracorp; 2005. Various p. [20 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999 (revised 2005)

GUIDELINE DEVELOPER(S)

Intracorp - Public For Profit Organization

SOURCE(S) OF FUNDING

Intracorp

GUIDELINE COMMITTEE

CIGNA Clinical Resources Unit (CRU)
Intracorp Disability Clinical Advisory Team (DCAT)
Medical Technology Assessment Committee (MTAC)
Intracorp Guideline Quality Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

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Reprints of complete guideline content may be purchased for $35.00 per title (plus tax in TX at 8.25% and CT at 1.0%). Please send e-mail request to lbowman@mail.intracorp.com.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Policies and procedures. Medical Technology Assessment Committee Review Process. Philadelphia (PA): Intracorp; 2004. 4 p.
- Online guideline user trial. Register for Claims Toolbox access at www.intracorp.com.

Licensing information and pricing: Available from Intracorp, 1601 Chestnut Street, TL-09C, Philadelphia, PA 19192; e-mail: lbowman@mail.intracorp.com.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on May 31, 2005. The information was verified by the guideline developer on June 7, 2005.

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